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Research Article

EFFECT OF *DRAKSHADI LEHYA* IN UNDERWEIGHT ADOLESCENT GIRLS AGED 10-19 YEARS

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ABSTRACT

Adolescence is a phase of rapid growth and development characterized by significant physical, physiological, and behavioural changes. In India, the prevalence of underweight among adolescent females aged 15 to 19 is 47%. Undernutrition can be compared to *Karshya* described in Ayurvedic classics. The proposed trial drug, *Drakshadi Lehya*, is a classical formulation mentioned in *Ashtanga Hridaya* under *Pandu Roga Chikitsa,* appears to be safe and potent in managing the condition. The study design was quasi experimental study with a sample size of 20 underweight adolescent girls, each for the study and control group aged between 10 and 19 years with a body mass index (BMI) less than 18.5kg/m^2 were selected from the Outpatient Department of Swasthavritta, Govt. Ayurveda College Panchakarma Hospital, Poojappura, Thiruvananthapuram. Subjective parameters assessed were the cardinal signs and symptoms of *Karshya* as mentioned in the Brihathrayee. The objective parameters were body mass index, mid-arm circumference, and, which were analysed before the study (0th day), after the study (45th day), and after the follow up (75th day). The study group was instructed to take 12 grams of *Drakshadi Lehya* twice daily after meals for 45 days, along with dietary modifications based on their nutritional needs. The control group was given advice regarding dietary modifications only. The statistical analyses, using Friedman's test and pairwise comparisons, consistently showed highly significant changes in the study group ($p<0.001$ in most cases) and often less significant or non-significant changes in the control group. This pattern of results strongly supports the efficacy of the intervention. After the study, the statistical interpretation suggest that *Drakshadi Lehya* is an effective formulation in underweight adolescent girls.

INTRODUCTION

Ayurveda, the Vedic science, offers a holistic approach to wellness, focusing on preventive and curative practices that promote a long and healthy life. An imbalance between intake and requirements over time can lead to malnutrition, manifested by alterations in intermediary metabolism, organ function, and body composition[1]. Undernutrition is identified as a major health and nutrition problem in India. It is not only an important cause of childhood morbidity and mortality, but also leads to permanent impairment of physical and possibly, of mental growth in those who survive[2].

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Undernutrition is a condition in which there is inadequate consumption, poor absorption, or excessive loss of nutrients[3]. The majority of nutritional problems arise from consuming the incorrect meals in combination, such as eating too many refined carbohydrates or not enough fresh vegetables in one's diet[4]. Lack of inadequate information, absence of proper guidance, parent's ignorance, lack of skills and insufficient services from the health care organisation are the major barriers[5].

Underweight can be correlated with *Karshya* in Ayurvedic classics. To some extent, *Karshya* is a disorder mentioned in Ayurveda classified as a *Rasa Pradoshaja Vyadhi*, *Upadrava Vyadhi*, *Swanthanthra Vyadhi*, *lakshana* of other diseases and a *Nidanarthakara Vyadhi*. According to *Acharya Charaka, Karshya* is also an *Apatharpanotha Vyadhi*. Its management is by *Santharpana* and *Brimhana*. *Krisha* is one of the *Ashtanindita purusha* explained in Ayurvedic classics[6]. There is no direct reference

regarding the symptoms of *Karshya* in our *Samhitas*. Hence signs and symptoms of *Atikarshya* can be considered as the *Lakshanas* of *Karshya*.

Ahara is considered as prime among the three sub-pillars of life as per *Acharyas*. The best sustainer of life, or "*Annam vrithi karanam sreshtam*" is *Ahara* according to *Acharya Charaka*[7]. *Ahara dosha* (faulty dietary habits) is the main predisposing factor for *Karshya* among with *Alpasana* (reduced intake of food) and *Vishamasana* (false habit of intake) are especially responsible for the development of *Karshya.*

Drakshadi Lehya, as mentioned in *Ashtanga Hridaya Chikitsa Sthana Pandu Roga Chikitsa*[8] is a good choice of drug in improving the health of underweight adolescent girls. *Amalaki* is the primary ingredient of the formulation. It contains *Draksha, Pippali, Madhukam, Shunti, Twaksheeri* as *Prakshepa Dravya*. Sugar and honey are other important ingredients in this formulation. Here we can see that most of the drugs are *Madhura Rasa, Madhura Vipaka, Guru Snigdha Guna, Seetha Veerya, Kapha vardhaka, Vatasamaka* and possess *Brimhana* and *Rasayana Karma,* hence they have action in *Dhatu* level and may pacify *Dhatu Kshaya.*

MATERIALS AND METHODS

Study design

Quasi experimental Study

Study Setting

OPD of Swasthavritta, Government Ayurveda Panchakarma Hospital, Poojappura, Thiruvananthapuram.

Sampling

Sampling Technique - Consecutive sampling

Consecutively selected subjects, who satisfied the inclusion and exclusion criteria, a sample of 40 subjects allocated in to two groups namely Study Group and Control Group in odd even manner to avoid contamination between two groups.

Study Population

Underweight adolescent girls aged 10-19 years having Body Mass Index (BMI) less than 18.5Kg/m^2 registered in Out Patient Department (OPD) of Swasthavritta in Govt. Ayurveda College Panchakarma Hospital, Poojappura, Thiruvananthapuram.

Inclusion Criteria

Underweight adolescent girls aged 10-19 years having Body Mass Index (BMI) less than 18.5Kg/m^2.

Exclusion Criteria

Known cases of

- Hyperthyroidism
- Tuberculosis
- Congenital and hereditary problems
- Malignancies
- Chronic gastro intestinal disorders

Intervention

Raw materials used in the study

S.No.	Sanskrit Name	Botanical Name	Family	Parts Used
1	*Amalaki*	Emblica officinalis	Euphorbiaceae	Fruit
2	*Draksha*	Vitis vinifera	Vitaceae	Ripe fruits (dried)
3	*Pippali*	Piper longum	Piperaceae	Fruit
4	*Yashtimadhu*	Glycyrrhiza glabra	Fabaceae	Root
5	*Shunti*	Zingiber officinale	Zingiberaceae	Rhizome
6	*Tugaksheeri*	Curcuma angustifolia	Zingiberaceae	Rhizome

PROCEDURE

Selection of the subjects

Adolescent girls aged 10-19 years who visited the OPD of the Swasthavritta Department at Govt. Ayurveda College Panchakarma Hospital, Poojappura, Thiruvananthapuram, who met with the inclusion and exclusion criteria, were screened. Their height and weight were measured, from which BMI was calculated. Undernourished subjects were selected based on WHO growth standards for BMI by age. Detailed demographic information's of the subjects was gathered using the case proforma. Subjective parameters assessed were the cardinal signs and symptoms of *Karshya* mentioned in *Brihathrayee.* The objective parameters were body mass index, mid arm circumference which were analysed before the study (0th day), after the study (45th day), and after the follow up (75th day). Routine examination of blood was also checked before and after the study. All the subjects were advised to take one teaspoon *Ashta choorna* along with the first morsel of food twice daily for one week prior to the study.

40 adolescent girls were selected and 20 subjects each was consecutively, allocated in to two groups namely Study Group and Control Group in odd even manner.

Administration of the drug

Study group

The study group was instructed to take 12 grams of *Drakshadi lehya* twice daily after meals for 45 days, along with dietary modifications based on their nutritional needs. The subjects were advised to sleep

only after 45 minutes. Assessment was done after 45th day and follow up after one month.

Each subject was given two bottles of *Drakshadi lehya* (200gm each) at a time for 14 days and instructed to come back on 15th and 29th day for bringing the next course of medicines to assure all the subjects have taken the medicine for 45 days continuously without fail.

Control group

The control group was given advice regarding dietary modifications in the form of a validated diet chart only and observed and assessed before and after the study, and follow up, for the changes in Body Mass Index (BMI) and mid upper arm circumference. On ethical consideration, the participants of the control group were given the medicine, after the completion of the study.

Assessment Days

The outcome was analysed through changes in anthropometric measurements- such as height, weight, Body Mass Index (BMI), Mid-Upper Arm Circumference (MUAC), and in both the Study and Control groups. Measurements were taken on 0th, 45th, and 75th days.

methods of Data Collection

1. Data were collected by using a case proforma.
2. Body mass index, mid upper arm circumference, and subjective parameters were assessed before and after the administration of proposed formulation.

Outcome Measurement

Body Mass Index

Mid Upper Arm Circumference

Grading of clinical parameters were assessed.

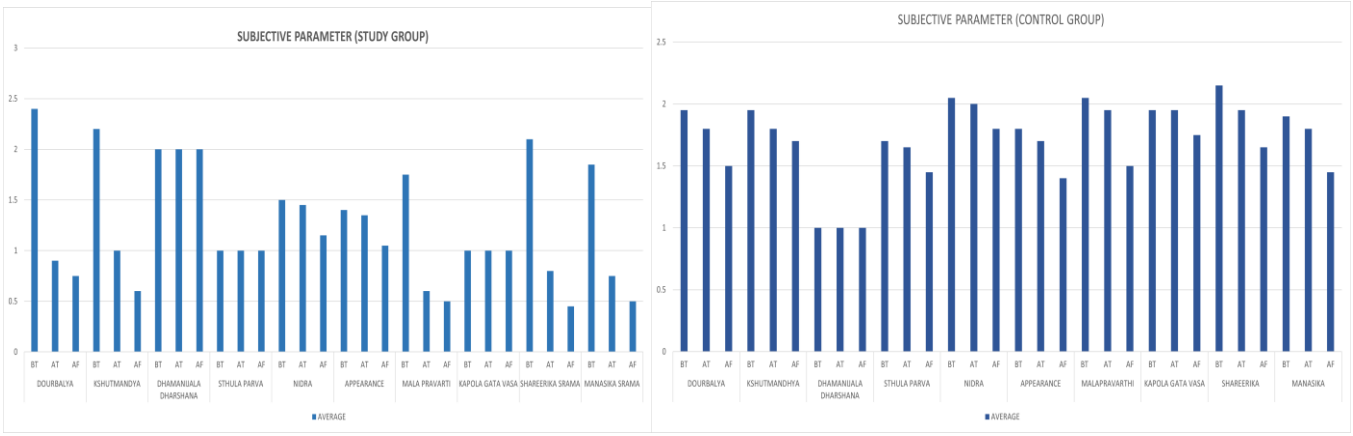
Data Related to Response to Treatment

Comparison of BMI Values Between Study and Control Groups at Different Time Points

BMI	Study group		Control group	
	Mean	SD	mean	SD
BT	16.24	1.28	16.00	1.09
AT	16.60	1.17	16.03	1.09
AF	16.90	1.14	16.04	1.10

Comparison of Mid-Arm Circumference Between Study and Control Groups

Mid arm circumference in cm	Study group		Control group	
	Mean	SD	Mean	SD
BT	19.35	0.98	19.35	1.09
AT	19.50	1.04	19.38	1.08
AF	19.70	1.05	19.40	1.06



DISCUSSION

The BMI of the study group increased from 16.24 before treatment to 16.90 at follow-up, while the control group's BMI remained relatively stable (16.00 to 16.04). Weight of the study group increased from 37.80kg to 39.28kg, while the control group's weight barely changed (36.47kg to 36.56kg).

The mid-arm circumference, showed significant improvement in the study group (from 19.35cm to 19.70cm), while remaining stable in the control group.

Proportion of 10-14 yrs is greater than 15-19 years. Need for giving awareness to the parents of early and mid-adolescents about the nutritional disorders is more than that of late adolescents.

Majority of the participants had irregular food pattern, which may be a reason for underweight.

Higher incidence of underweight seen in participants consuming *Katu rasa. Vata* predominance and *Rooksha guna* of *Katu rasa* its excessive intake may lead to *Karshya*.

Majority of the subjects had recurrence of infections. Antioxidant, immunomodulatory action of these drugs helps to reduce the recurrence. In *Karshya*, the quantitative and qualitative decrease of *Rasa dhatu* impairs the nourishment of further *Dhatus* which in turn affects the formation of *Ojas*.

Thus, there is loss of immunity *(Vyadhikshamatva)* and results in frequent episodes of allergy. recurrence of infections. The malnutrition-infection complex can be viewed under two aspects, malnutrition compromising host defence, or infection either aggravating a previously existing deficient nutritional status or triggering malnutrition through disease pathogenesis. Malnutrition can facilitate pathogen invasion and propagation, further, it can increase the probability of a secondary infection occurring, thus modifying both disease pathogenesis and prognosis.

AMALAKI • DEEPANA,PACHANA • BALYA • MEDHYA • RASAYANA	**SHUNTI** • DEEPANA • PACHANA • VRISHYA
DRAKSHA • SANTARPANA • RUCHIKARA • BALYA	**TUGAKSHEERI** • BRIMHANA • BALYA • DHATU VARDHAKA
PIPPALI • DEEPANA • RASAYANA • VRISHYA	**SHARKARA** • BALYA • SRAMAHARA
YASHTIMADHU • BALYA • MEDHYA • KSHAYA PAHA	**MADHU** • VRISHYA • DEEPANA

- ✓ *Deepana, Pachana Karma* improves the *Agni* and helps in digestion, assimilation, and metabolism.
- ✓ *Madhura rasa Madhura vipaka Guru Snigdha guna* decreases *Vata dosha* by reducing the *Ruksha guna*.
- ✓ *Brimhana, Balya, Rasayana karma* helps in *Dhatu poshana*, providing nourishment to *Sapta dhatus*.
- ✓ *Sookshmaguna, Yogavahi Guna* helps in *Srotosodhana* and helps in absorption of nutrients.

CONCLUSION

The study group demonstrated significant increases in BMI, weight, and mid-arm circumference. The intervention was statistically significant at $p<0.001$ in increasing the body weight, BMI and mid arm circumference in the study group. Frequent episodes of illness got reduced in the study group after the intake of the medicine. While considering subjective parameters, more changes observed in *Dourbalya, Kshut mandhya, Nidra* and *Shrama*. This improvement in subjective parameters suggests that the intervention had benefits extending beyond physical health to encompass psychological well-being.

No significant changes in BMI were observed with only the dietary modifications in the control group.

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